



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/771,897	02/04/2004	Narasimhan Gautam	15060-60	3893
69940 7590 07/11/2008 PATRICK W. RASCHE (15060) ARMSTRONG TEASDALE, LLP ONE METROPOLITAN SQUARE SUITE 2600 SAINT LOUIS, MO 63102-2740				
EXAMINER				
ROOKE, AGNUS BEATA				
ART UNIT		PAPER NUMBER		
1656				
NOTIFICATION DATE		DELIVERY MODE		
07/11/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patent@otm.wustl.edu

USpatents@armstrongteasdale.com

Office Action Summary

Application No.

10/771,897

Applicant(s)

GAUTAM ET AL.

Examiner

AGNES B. ROOKE

Art Unit

1656

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2008.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-35 and 37-45 is/are pending in the application.
4a) Of the above claim(s) 7-34, 37 and 39-45 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 4, 5, 35, and 38 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SF/08)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

This FINAL office action is in response to the paper filed on 04/01/2008.
The amendments to the claims are acknowledged.

Status of Claims

Claims 4, 5, 35, and 38 are under examination. Claims 1-3, 6, and 36 are cancelled. Claims 7-34, 37, and 39-45 are withdrawn. Claims 4-35 and 37-45 are pending.

Rejections Withdrawn

The rejection of claims 1-3, under 35 USC 112, first paragraph, is withdrawn in view of the cancellation of the claims.

Rejection Maintained

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The rejection of claims 4, 5, 35, and 38 under 35 U.S.C. 103(a) as being unpatentable over Devreotes et al. (U.S. 2002/0048811) in view of Wittamer et al. (U.S. 2003/0104478) is maintained.

Devereotes et al. teach receptor mediates activation of heterotrimeric G-proteins that is visualized in living cells by monitoring fluorescence resonance

Art Unit: 1656

energy transfer (FRET) between subunits of G-protein fused to cyan and yellow fluorescent proteins. See Abstract.

In Example 1, page 4 in [0044-0045], Devreotes et al. teach fusion of yellow fluorescent proteins to the amino end of G protein subunit β ; also they teach fusing fluorescent proteins into G protein, such as $G\alpha_2$; further, FRET was used to observe the state of the G-protein heterotrimer in living cells. (See instant claims 4-5 and 35 and 38).

Examiner points out that the β subunit and the γ subunit upon stimulation in the biosensor are bound together, see prior art and the instant Figure 27 of the disclosure. Thus, according to the claims they both bind to the second fluorescent/luminescent sequence, and they do not bind to two separate second amino acid sequences, for example.

Devreotes et al. do not teach G mammalian protein.

Whittamer et al. teach mammalian G protein, see [0008]; where the invention relates to a G-protein receptor and screening assays for the identification of candidate compounds and G protein coupled receptor signaling, see Abstract.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to substitute the G protein of Devreotes et al. with the G mammalian protein of Whittamer et al. since G proteins of different origin will have the same function and the same mode of operation when acting in a functional biosensor.

One would be motivated to use a mammalian G protein in a biosensor because such designs are known in the art and proven to be successful.

Applicants responded that by amending claim 4 that now states: "...wherein each of the β subunit and the γ subunit comprise a second amino acid sequence..." the rejection is overcome. Further claims 35 and 36 were amended to state that both β subunit and the γ subunit comprise a second amino acid sequence.

Further, Applicants pointed to Figure 27 and 28, where it shows that the fluorescent marker is bound separately to β subunit and the γ . Thus, Applicants did not introduce a new matter, since specifically Figure 27 shows that fluorescent marker is bound separately to both β subunit and the γ subunit.

However, the claims do not reflect the invention from Figure 27. Under broadest reasonable interpretation of the claims, β subunit and the γ subunit are bound to the same second fluorescent marker, i.e. a second amino acid sequence, and since they are bound together as $\beta\gamma$ complex the art still applies.

Further, Applicants argue that neither Devreotes nor Wittamer considered alone or in combination describe a biosensor as recited in claims 4, 35, and 38. Further, Applicants assert that the prior art does not teach that "mammalian β and γ subunits both are including a second amino acid sequence encoding a second fluorescent and/or luminescent protein."

Examiner acknowledged the language of the claims as amended, but according to the language of the claims as presented, β subunit and the γ

Art Unit: 1656

subunit are both bond to the same second amino acid sequence encoding a second fluorescent and/or luminescent protein. Further, there is no indication that there are three fluorescent/luminescent proteins bound separately to $\gamma\beta\alpha$ subunits respectively, as indicated in Figure 27 of the disclosure.

Further, Applicants addressed claim 6 in the arguments and claim 6 is cancelled.

Therefore, the rejection is proper and is thus maintained.

Conclusion

No claims are allowed.

THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agnes Rooke whose telephone number is 571-272-2055. If attempts to reach the examiner by telephone are unsuccessful,

Art Unit: 1656

the examiner's supervisor, Kathleen Kerr Bragdon can be reached on 571-272-0931. The fax phone number for the organization where this application or proceeding is assigned is 571-272-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197.

AR

/Kathleen Kerr Bragdon/

Supervisory Patent Examiner, Art Unit 1656